

SEQUENCE LISTING

<110> Rockwell, Patricia
Goldstein, Neil I.
<120> Combination Methods of Inhibiting Tumor Growth With a Vascular
Endothelial Growth Factor Receptor Antagonist

<130> 11245/46211

<140> not assigned

<141> 2002-03-04

<160> 85

<170> WordPerfect 8.0 for Windows

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<213> Human

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Arg Ala Ser Gln Ser Val Ser Ser Tyr Leu Ala
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Asp Ser Ser Asn Arg Ala Thr
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Leu Gln His Asn Thr Phe Pro Pro Thr
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Arg Ala Ser Gln Gly Ile Ser Ser Arg Leu Ala
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Ala Ala Ser Ser Leu Gln Thr
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Gln Gln Ala Asn Arg Phe Pro Pro Thr
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Asp Gly Asn Lys Arg Pro Ser
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Asn Ser Tyr Val Ser Ser Arg Phe Tyr Val
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Asn Asn Asn Gln Arg Pro Ser
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Gly Phe Thr Phe Ser Ser Tyr Ser Met Asn
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Ser Ile Ser Ser Ser Ser Ser Tyr Ile Tyr Tyr Ala Asp Ser Val Lys
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Gly
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Val Thr Asp Ala Phe Asp Ile
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Gly Gly Thr Phe Ser Ser Tyr Ala Ile Ser
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Gln Gly
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Ser Val Lys Val Ser Cys Lys Ala Ser Gly Gly Thr Phe Ser Ser Tyr
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gct atc agc tgg gtg cga cag gcc cct gga caa ggg ctt gag tgg atg 144
Ala Ile Ser Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met
35 40 45

gga ggg atc atc cct atc ttt ggt aca gca aac tac gca cag aag ttc 192
Gly Gly Ile Ile Pro Ile Phe Gly Thr Ala Asn Tyr Ala Gln Lys Phe
50 55 60

cag ggc aga gtc act ttt acc gcg gac aaa tcc acg agt aca gcc tat 240
Gln Gly Arg Val Thr Phe Thr Ala Asp Lys Ser Thr Ser Thr Ala Tyr
65 70 75 80

atg	gag	ttg	agg	agc	ctg	aga	tct	gac	gac	acg	gcc	gtg	tat	tac	tgt	288
Met	Glu	Leu	Arg	Ser	Leu	Arg	Ser	Asp	Asp	Thr	Ala	Val	Tyr	Tyr	Cys	
				85					90					95		

gcg aga gga tac gat tac tat gat agt agt ggc gtg gct tcc ccc ttt 336
Ala Arg Gly Tyr Asp Tyr Tyr Asp Ser Ser Gly Val Ala Ser Pro Phe
100 105 110

gac tac tgg ggc cag gga acc ctg gtc acc gtc tca agc 375
Asp Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
115 120 125

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35 40 45	
Ile His Asn Asn Asn Gln Arg Pro Ser Gly Val Pro Asp Arg Phe Ser	
50 55 60	
Gly Ser Lys Ser Gly Thr Ser Ala Ser Leu Ala Ile Ser Gly Leu Gln	
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tcc ctg aga ctc tcc tgt gca gcc tct gga ttc acc ttc agt agc tat	96
Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Ser Tyr	
20 25 30	
agc atg aac tgg gtc cgc cag gct cca ggg aag ggg ctg gag tgg gtc	144
Ser Met Asn Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val	
35 40 45	
tca tcc att agt agt agt agt agt tac ata tac tac gca gac tca gtg	192
Ser Ser Ile Ser Ser Ser Ser Ser Tyr Ile Tyr Ala Asp Ser Val	
50 55 60	
aag ggc cga ttc acc atc tcc aga gac aac gcc aag aac tca ctg tat	240
Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn Ser Leu Tyr	
65 70 75 80	
ctg caa atg aac agc ctg aga gcc gag gac acg gct gtg tat tac tgt	288
Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys	

85										90					95					
gcg	aga	gtc	aca	gat	gct	ttt	gat	atc	tgg	ggc	caa	ggg	aca	atg	gtc	336				
Ala	Arg	Val	Thr	Asp	Ala	Phe	Asp	Ile	Trp	Gly	Gln	Gly	Thr	Met	Val					
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acc	gtc	tca	agc													348
Thr	Val	Ser	Ser													
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			20					25					30		

Ser	Met	Asn	Trp	Val	Arg	Gln	Ala	Pro	Gly	Lys	Gly	Leu	Glu	Trp	Val
		35					40					45			

Ser	Ser	Ile	Ser	Ser	Ser	Ser	Ser	Tyr	Ile	Tyr	Tyr	Ala	Asp	Ser	Val
	50					55					60				

Lys	Gly	Arg	Phe	Thr	Ile	Ser	Arg	Asp	Asn	Ala	Lys	Asn	Ser	Leu	Tyr
65					70					75					80

Leu	Gln	Met	Asn	Ser	Leu	Arg	Ala	Glu	Asp	Thr	Ala	Val	Tyr	Tyr	Cys
				85					90					95	

Ala	Arg	Val	Thr	Asp	Ala	Phe	Asp	Ile	Trp	Gly	Gln	Gly	Thr	Met	Val
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Thr	Val	Ser	Ser												
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<210> 25
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				5					10					15		

gaa	aga	gcc	acc	ctc	tcc	tgc	agg	gcc	agt	cag	agt	gtt	agc	agc	tac	96
Glu	Arg	Ala	Thr	Leu	Ser	Cys	Arg	Ala	Ser	Gln	Ser	Val	Ser	Ser	Tyr	
			20					25					30			

tta	gcc	tgg	tac	caa	cag	aaa	cct	ggc	cag	gct	ccc	agg	ctc	ctc	atc	144
Leu	Ala	Trp	Tyr	Gln	Gln	Lys	Pro	Gly	Gln	Ala	Pro	Arg	Leu	Leu	Ile	
		35					40					45				

tat	gat	tca	tcc	aac	agg	gcc	act	ggc	atc	cca	gcc	aga	ttc	agt	ggc	192
Tyr	Asp	Ser	Ser	Asn	Arg	Ala	Thr	Gly	Ile	Pro	Ala	Arg	Phe	Ser	Gly	

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agt ggg tct ggg aca gac ttc act ctc acc atc agc agc cta gag cct			240
Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Glu Pro			
65	70	75	80
gaa gat ttt gca act tat tac tgt cta cag cat aac act ttt cct ccg			288
Glu Asp Phe Ala Thr Tyr Tyr Cys Leu Gln His Asn Thr Phe Pro Pro			
	85	90	95
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Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys			
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<210> 26
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 <213> Human

<400> 26

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Glu Arg Ala Thr Leu Ser Cys Arg Ala Ser Gln Ser Val Ser Ser Tyr			
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Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Arg Leu Leu Ile			
	35	40	45
Tyr Asp Ser Ser Asn Arg Ala Thr Gly Ile Pro Ala Arg Phe Ser Gly			
	50	55	60
Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Glu Pro			
	65	70	75
Glu Asp Phe Ala Thr Tyr Tyr Cys Leu Gln His Asn Thr Phe Pro Pro			
	85	90	95
Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys			
	100	105	

<210> 27
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	5	10	15
tcc ctg aga ctc tcc tgt gca gcc tct gga ttc acc ttc agt agc tat			96
Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Ser Tyr			
	20	25	30
agc atg aac tgg gtc cgc cag gct cca ggg aag ggg ctg gag tgg gtc			144
Ser Met Asn Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val			
	35	40	45
tca tcc att agt agt agt agt agt tac ata tac tac gca gac tca gtg			192

Ser	Ser	Ile	Ser	Ser	Ser	Ser	Ser	Tyr	Ile	Tyr	Tyr	Ala	Asp	Ser	Val		
50							55					60					
aag	ggc	cga	ttc	acc	atc	tcc	aga	gac	aac	gcc	aag	aac	tca	ctg	tat		240
Lys	Gly	Arg	Phe	Thr	Ile	Ser	Arg	Asp	Asn	Ala	Lys	Asn	Ser	Leu	Tyr		
65					70					75					80		
ctg	caa	atg	aac	agc	ctg	aga	gcc	gag	gac	acg	gct	gtg	tat	tac	tgt		288
Leu	Gln	Met	Asn	Ser	Leu	Arg	Ala	Glu	Asp	Thr	Ala	Val	Tyr	Tyr	Cys		
				85					90					95			
gcg	aga	gtc	aca	gat	gct	ttt	gat	atc	tgg	ggc	caa	ggg	aca	atg	gtc		336
Ala	Arg	Val	Thr	Asp	Ala	Phe	Asp	Ile	Trp	Gly	Gln	Gly	Thr	Met	Val		
			100					105					110				
acc	gtc	tca	agc														348
Thr	Val	Ser	Ser														
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<210> 28
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 <213> Human

<400> 28

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				5					10					15			
tcg	atc	acc	atc	tcc	tgc	gct	gga	acc	acc	act	gat	ctt	aca	tat	tat		96
Ser	Ile	Thr	Ile	Ser	Cys	Ala	Gly	Thr	Thr	Thr	Asp	Leu	Thr	Tyr	Tyr		
			20					25					30				
gac	ctt	gtc	tcc	tgg	tac	caa	cag	cac	cca	ggc	caa	gca	ccc	aaa	ctc		144
Asp	Leu	Val	Ser	Trp	Tyr	Gln	Gln	His	Pro	Gly	Gln	Ala	Pro	Lys	Leu		
		35					40					45					
gtg	att	tat	gac	ggc	aat	aag	cgg	ccc	tca	gga	gtt	tct	aat	cgc	ttc		192
Val	Ile	Tyr	Asp	Gly	Asn	Lys	Arg	Pro	Ser	Gly	Val	Ser	Asn	Arg	Phe		
	50				55						60						
tct	ggc	tcc	aag	tct	ggc	aac	acg	gcc	tcc	ctg	aca	atc	tct	gga	ctc		240
Ser	Gly	Ser	Lys	Ser	Gly	Asn	Thr	Ala	Ser	Leu	Thr	Ile	Ser	Gly	Leu		
65				70						75					80		
cag	gct	gag	gac	gag	gct	gat	tat	tac	tgc	aac	tca	tat	gta	agc	agc		288
Gln	Ala	Glu	Asp	Glu	Ala	Asp	Tyr	Tyr	Cys	Asn	Ser	Tyr	Val	Ser	Ser		
				85					90					95			
agg	ttt	tat	gtc	ttc	gga	act	ggg	acc	aag	gtc	acc	gtc	cta				330
Arg	Phe	Tyr	Val	Phe	Gly	Thr	Gly	Thr	Lys	Val	Thr	Val	Leu				
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<210> 29
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Gln Ser Ala Leu Thr Gln Pro Ala Ser Leu Ser Gly Ser Pro Gly Gln
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Ser Ile Thr Ile Ser Cys Ala Gly Thr Thr Thr Asp Leu Thr Tyr Tyr
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Asp Leu Val Ser Trp Tyr Gln Gln His Pro Gly Gln Ala Pro Lys Leu
35 40 45
Val Ile Tyr Asp Gly Asn Lys Arg Pro Ser Gly Val Ser Asn Arg Phe
50 55 60
Ser Gly Ser Lys Ser Gly Asn Thr Ala Ser Leu Thr Ile Ser Gly Leu
65 70 75 80
Gln Ala Glu Asp Glu Ala Asp Tyr Tyr Cys Asn Ser Tyr Val Ser Ser
85 90 95
Arg Phe Tyr Val Phe Gly Thr Gly Thr Lys Val Thr Val Leu
100 105 110

<210> 30
<211> 348
<212> DNA
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<400> 30

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Glu Val Gln Leu Val Gln Ser Gly Gly Leu Val Lys Pro Gly Gly
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tcc ctg aga ctc tcc tgt gca gcc tct gga ttc acc ttc agt agc tat 96
Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Ser Tyr
20 25 30
agc atg aac tgg gtc cgc cag gct cca ggg aag ggg ctg gag tgg gtc 144
Ser Met Asn Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
35 40 45
tca tcc att agt agt agt agt agt tac ata tac tac gca gac tca gtg 192
Ser Ser Ile Ser Ser Ser Ser Ser Tyr Ile Tyr Tyr Ala Asp Ser Val
50 55 60
aag ggc cga ttc acc atc tcc aga gac aac gcc aag gac tca ctg tat 240
Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asp Ser Leu Tyr
65 70 75 80
ctg caa atg aac agc ctg aga gcc gag gac acg gct gtg tat tac tgt 288
Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys
85 90 95
gcg aga gtc aca gat gct ttt gat atc tgg ggc caa ggg aca atg gtc 336
Ala Arg Val Thr Asp Ala Phe Asp Ile Trp Gly Gln Gly Thr Met Val
100 105 110
acc gtc tca agc 348
Thr Val Ser Ser
115

<210> 31
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<400> 31

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Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Ser Tyr
20 25 30
Ser Met Asn Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
35 40 45
Ser Ser Ile Ser Ser Ser Ser Ser Tyr Ile Tyr Tyr Ala Asp Ser Val
50 55 60
Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asp Ser Leu Tyr
65 70 75 80
Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys
85 90 95
Ala Arg Val Thr Asp Ala Phe Asp Ile Trp Gly Gln Gly Thr Met Val
100 105 110
Thr Val Ser Ser
115

<210> 32
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<212> DNA
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<400> 32

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Asp Ile Gln Leu Thr Gln Ser Pro Ser Ser Val Ser Ala Ser Val Gly
5 10 15
gac aga gtc acc atc act tgt cgg gcg agt cag ggt att agt agt cgg 96
Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Gly Ile Ser Ser Arg
20 25 30
tta gcc tgg tat cag cag aaa cca ggg aaa gcc cct aag ctg atc 144
Leu Ala Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile
35 40 45
tat gct gca tcc agt ttg caa act ggg gtc cca tca agg ttc agc ggc 192
Tyr Ala Ala Ser Ser Leu Gln Thr Gly Val Pro Ser Arg Phe Ser Gly
50 55 60
agt gga tct ggg aca gat ttc act ctc act atc agc agc ctg cag cct 240
Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
65 70 75 80
gaa gat ttt gca act tac tat tgt caa cag gct aac agg ttc cct ccg 288
Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln Ala Asn Arg Phe Pro Pro
85 90 95
act ttc ggc cct ggg acc aaa gtg gat atc aaa 321
Thr Phe Gly Pro Gly Thr Lys Val Asp Ile Lys
100 105

<210> 33
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Asp	Ile	Gln	Leu	Thr	Gln	Ser	Pro	Ser	Ser	Val	Ser	Ala	Ser	Val	Gly	
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		20						25					30			
Leu	Ala	Trp	Tyr	Gln	Gln	Lys	Pro	Gly	Lys	Ala	Pro	Lys	Leu	Leu	Ile	
		35					40					45				
Tyr	Ala	Ala	Ser	Ser	Leu	Gln	Thr	Gly	Val	Pro	Ser	Arg	Phe	Ser	Gly	
	50					55					60					
Ser	Gly	Ser	Gly	Thr	Asp	Phe	Thr	Leu	Thr	Ile	Ser	Ser	Leu	Gln	Pro	
65					70					75					80	
Glu	Asp	Phe	Ala	Thr	Tyr	Tyr	Cys	Gln	Gln	Ala	Asn	Arg	Phe	Pro	Pro	
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Thr	Phe	Gly	Pro	Gly	Thr	Lys	Val	Asp	Ile	Lys						
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<400> 34

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				5					10					15		
agg	gtc	acc	atc	tcc	tgc	act	ggg	agc	cac	tcc	aac	ttc	ggg	gca	gga	96
Arg	Val	Thr	Ile	Ser	Cys	Thr	Gly	Ser	His	Ser	Asn	Phe	Gly	Ala	Gly	
			20					25				30				
act	gat	gta	cat	tgg	tac	caa	cac	ctt	cca	gga	aca	gcc	ccc	aga	ctc	144
Thr	Asp	Val	His	Trp	Tyr	Gln	His	Leu	Pro	Gly	Thr	Ala	Pro	Arg	Leu	
		35					40					45				
ctc	att	cat	gga	gac	agt	aat	cgg	ccc	tcc	ggg	gtc	cct	gac	cga	ttc	192
Leu	Ile	His	Gly	Asp	Ser	Asn	Arg	Pro	Ser	Gly	Val	Pro	Asp	Arg	Phe	
	50					55					60					
tct	ggc	tcc	agg	tct	ggc	acc	tca	gcc	tcc	ctg	gcc	atc	act	ggg	ctc	240
Ser	Gly	Ser	Arg	Ser	Gly	Thr	Ser	Ala	Ser	Leu	Ala	Ile	Thr	Gly	Leu	
65					70					75					80	
cgg	gtt	gag	gat	gag	gct	gat	tat	tac	tgt	cag	tcg	tat	gac	tat	ggc	288
Arg	Val	Glu	Asp	Glu	Ala	Asp	Tyr	Tyr	Cys	Gln	Ser	Tyr	Asp	Tyr	Gly	
				85					90					95		
ctg	aga	ggg	tgg	gtg	ttc	ggc	ggc	ggg	acc	aag	ctg	acc	gtc	ctt		333
Leu	Arg	Gly	Trp	Val	Phe	Gly	Gly	Gly	Thr	Lys	Leu	Thr	Val	Leu		
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Arg	Val	Thr	Ile	Ser	Cys	Thr	Gly	Ser	His	Ser	Asn	Phe	Gly	Ala	Gly	
			20					25					30			
Thr	Asp	Val	His	Trp	Tyr	Gln	His	Leu	Pro	Gly	Thr	Ala	Pro	Arg	Leu	
		35					40					45				
Leu	Ile	His	Gly	Asp	Ser	Asn	Arg	Pro	Ser	Gly	Val	Pro	Asp	Arg	Phe	
	50					55					60					
Ser	Gly	Ser	Arg	Ser	Gly	Thr	Ser	Ala	Ser	Leu	Ala	Ile	Thr	Gly	Leu	
	65				70					75					80	
Arg	Val	Glu	Asp	Glu	Ala	Asp	Tyr	Tyr	Cys	Gln	Ser	Tyr	Asp	Tyr	Gly	
				85					90					95		
Leu	Arg	Gly	Trp	Val	Phe	Gly	Gly	Gly	Thr	Lys	Leu	Thr	Val	Leu		
			100					105					110			

<210> 36
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gat	gtt	gtg	atg	act	cag	tct	cca	tcg	tcc	ctg	tct	gca	tct	gta	ggg	48
Asp	Val	Val	Met	Thr	Gln	Ser	Pro	Ser	Ser	Leu	Ser	Ala	Ser	Val	Gly	
				5					10					15		
gac	aga	gtc	acc	atc	act	tgc	cgg	gca	agt	cag	aac	att	aac	aac	tat	96
Asp	Arg	Val	Thr	Ile	Thr	Cys	Arg	Ala	Ser	Gln	Asn	Ile	Asn	Asn	Tyr	
			20					25					30			
tta	aat	tgg	tat	caa	cag	aaa	cca	gga	aaa	gcc	cct	aag	ctc	ctg	atc	144
Leu	Asn	Trp	Tyr	Gln	Gln	Lys	Pro	Gly	Lys	Ala	Pro	Lys	Leu	Leu	Ile	
		35					40					45				
tat	gct	gcc	tcc	act	ttg	caa	agt	ggg	gtc	cca	tca	agg	ttc	agt	ggc	192
Tyr	Ala	Ala	Ser	Thr	Leu	Gln	Ser	Gly	Val	Pro	Ser	Arg	Phe	Ser	Gly	
	50					55					60					
agt	gga	tct	ggg	aca	gat	ttc	act	ctc	acc	atc	acc	agc	cta	cag	cct	240
Ser	Gly	Ser	Gly	Thr	Asp	Phe	Thr	Leu	Thr	Ile	Thr	Ser	Leu	Gln	Pro	
	65				70					75					80	
gaa	gat	tct	gca	act	tat	tac	tgc	caa	cag	tat	tcc	cgt	tat	cct	ccc	288
Glu	Asp	Ser	Ala	Thr	Tyr	Tyr	Cys	Gln	Gln	Tyr	Ser	Arg	Tyr	Pro	Pro	
				85				90						95		
act	ttc	ggc	gga	ggg	acc	aag	gtg	gag	atc	aca						321
Thr	Phe	Gly	Gly	Gly	Thr	Lys	Val	Glu	Ile	Thr						
			100					105								

<210> 37
 <211> 107
 <212> PRT
 <213> Human

<400> 37

Asp	Val	Val	Met	Thr	Gln	Ser	Pro	Ser	Ser	Leu	Ser	Ala	Ser	Val	Gly	
				5					10					15		
Asp	Arg	Val	Thr	Ile	Thr	Cys	Arg	Ala	Ser	Gln	Asn	Ile	Asn	Asn	Tyr	
			20					25					30			
Leu	Asn	Trp	Tyr	Gln	Gln	Lys	Pro	Gly	Lys	Ala	Pro	Lys	Leu	Leu	Ile	
		35					40					45				
Tyr	Ala	Ala	Ser	Thr	Leu	Gln	Ser	Gly	Val	Pro	Ser	Arg	Phe	Ser	Gly	
	50					55					60					
Ser	Gly	Ser	Gly	Thr	Asp	Phe	Thr	Leu	Thr	Ile	Thr	Ser	Leu	Gln	Pro	
	65				70					75					80	
Glu	Asp	Ser	Ala	Thr	Tyr	Tyr	Cys	Gln	Gln	Tyr	Ser	Arg	Tyr	Pro	Pro	
				85					90					95		
Thr	Phe	Gly	Gly	Gly	Thr	Lys	Val	Glu	Ile	Thr						
			100					105								

<210> 38
 <211> 330
 <212> DNA
 <213> Human

<400> 38

cag	tct	gcc	ctg	act	cag	cct	gcc	tcc	gtg	tct	ggg	tct	cgt	gga	cag	48
Gln	Ser	Ala	Leu	Thr	Gln	Pro	Ala	Ser	Val	Ser	Gly	Ser	Arg	Gly	Gln	
				5					10					15		
tcg	atc	acc	ctc	tcc	tgc	acc	ggc	tcc	agc	act	gat	gtg	ggg	aat	tat	96
Ser	Ile	Thr	Leu	Ser	Cys	Thr	Gly	Ser	Ser	Thr	Asp	Val	Gly	Asn	Tyr	
			20				25						30			
aac	tat	atc	tcc	tgg	tac	caa	caa	cac	cca	ggc	caa	gcc	ccc	aaa	ctc	144
Asn	Tyr	Ile	Ser	Trp	Tyr	Gln	Gln	His	Pro	Gly	Gln	Ala	Pro	Lys	Leu	
			35				40					45				
ttg	att	tac	gat	gtc	act	agt	cgg	ccc	tca	ggg	gtt	tct	gat	cgc	ttc	192
Leu	Ile	Tyr	Asp	Val	Thr	Ser	Arg	Pro	Ser	Gly	Val	Ser	Asp	Arg	Phe	
			50			55					60					
tct	ggc	tcc	aag	tca	ggc	ctc	acg	gcc	tcc	ctg	acc	atc	tct	gga	ctc	240
Ser	Gly	Ser	Lys	Ser	Gly	Leu	Thr	Ala	Ser	Leu	Thr	Ile	Ser	Gly	Leu	
	65				70				75					80		
cag	cct	gaa	gac	gag	gct	gac	tat	tac	tgc	aac	tcc	tat	tct	gcc	acc	288
Gln	Pro	Glu	Asp	Glu	Ala	Asp	Tyr	Tyr	Cys	Asn	Ser	Tyr	Ser	Ala	Thr	
				85					90					95		
gac	act	ctt	gtt	ttt	ggc	gga	ggg	acc	aag	ctg	acc	gtc	cta			330
Asp	Thr	Leu	Val	Phe	Gly	Gly	Gly	Thr	Lys	Leu	Thr	Val	Leu			
			100					105					110			

<210> 39
 <211> 110
 <212> PRT
 <213> Human

<400> 39

Gln	Ser	Ala	Leu	Thr	Gln	Pro	Ala	Ser	Val	Ser	Gly	Ser	Arg	Gly	Gln	
				5					10					15		
Ser	Ile	Thr	Leu	Ser	Cys	Thr	Gly	Ser	Ser	Thr	Asp	Val	Gly	Asn	Tyr	
			20					25					30			
Asn	Tyr	Ile	Ser	Trp	Tyr	Gln	Gln	His	Pro	Gly	Gln	Ala	Pro	Lys	Leu	
		35					40					45				
Leu	Ile	Tyr	Asp	Val	Thr	Ser	Arg	Pro	Ser	Gly	Val	Ser	Asp	Arg	Phe	
	50					55					60					
Ser	Gly	Ser	Lys	Ser	Gly	Leu	Thr	Ala	Ser	Leu	Thr	Ile	Ser	Gly	Leu	
	65				70					75					80	
Gln	Pro	Glu	Asp	Glu	Ala	Asp	Tyr	Tyr	Cys	Asn	Ser	Tyr	Ser	Ala	Thr	
				85					90					95		
Asp	Thr	Leu	Val	Phe	Gly	Gly	Gly	Thr	Lys	Leu	Thr	Val	Leu			
		100						105					110			

<210> 40
 <211> 333
 <212> DNA
 <213> Human

<400> 40

cag	gct	gtg	ctg	act	cag	ccg	tcc	tca	gtg	tct	ggg	gcc	cca	gga	cag	48
Gln	Ala	Val	Leu	Thr	Gln	Pro	Ser	Ser	Val	Ser	Gly	Ala	Pro	Gly	Gln	
				5					10					15		
agg	gtc	acc	atc	tcc	tgc	act	ggg	caa	agc	tcc	aat	atc	ggg	gca	gat	96
Arg	Val	Thr	Ile	Ser	Cys	Thr	Gly	Gln	Ser	Ser	Asn	Ile	Gly	Ala	Asp	
			20					25					30			
tat	gat	gta	cat	tgg	tac	cag	caa	ttt	cca	gga	aca	gcc	ccc	aaa	ctc	144
Tyr	Asp	Val	His	Trp	Tyr	Gln	Gln	Phe	Pro	Gly	Thr	Ala	Pro	Lys	Leu	
		35					40					45				
ctc	atc	tat	ggg	cac	aac	aat	cgg	ccc	tca	ggg	gtc	cct	gac	cga	ttc	192
Leu	Ile	Tyr	Gly	His	Asn	Asn	Arg	Pro	Ser	Gly	Val	Pro	Asp	Arg	Phe	
	50					55					60					
tct	ggc	tcc	aag	tct	ggc	acc	tca	gtc	tcc	ctg	gtc	atc	agt	ggg	ctc	240
Ser	Gly	Ser	Lys	Ser	Gly	Thr	Ser	Val	Ser	Leu	Val	Ile	Ser	Gly	Leu	
	65				70					75					80	
cag	gct	gag	gat	gag	gct	gat	tat	tat	tgc	cag	tcc	tat	gac	agc	agt	288
Gln	Ala	Glu	Asp	Glu	Ala	Asp	Tyr	Tyr	Cys	Gln	Ser	Tyr	Asp	Ser	Ser	
				85					90					95		
cta	agt	ggg	ttg	gta	ttc	ggc	gga	ggg	acc	aag	gtg	acc	gtc	cta		333
Leu	Ser	Gly	Leu	Val	Phe	Gly	Gly	Gly	Thr	Lys	Val	Thr	Val	Leu		
			100					105					110			

<210> 41
 <211> 111
 <212> PRT
 <213> Human

<400> 41

Gln	Ala	Val	Leu	Thr	Gln	Pro	Ser	Ser	Val	Ser	Gly	Ala	Pro	Gly	Gln	
				5					10					15		
Arg	Val	Thr	Ile	Ser	Cys	Thr	Gly	Gln	Ser	Ser	Asn	Ile	Gly	Ala	Asp	
			20					25					30			
Tyr	Asp	Val	His	Trp	Tyr	Gln	Gln	Phe	Pro	Gly	Thr	Ala	Pro	Lys	Leu	
		35					40					45				
Leu	Ile	Tyr	Gly	His	Asn	Asn	Arg	Pro	Ser	Gly	Val	Pro	Asp	Arg	Phe	
	50					55					60					
Ser	Gly	Ser	Lys	Ser	Gly	Thr	Ser	Val	Ser	Leu	Val	Ile	Ser	Gly	Leu	
	65				70					75					80	
Gln	Ala	Glu	Asp	Glu	Ala	Asp	Tyr	Tyr	Cys	Gln	Ser	Tyr	Asp	Ser	Ser	
				85					90					95		
Leu	Ser	Gly	Leu	Val	Phe	Gly	Gly	Gly	Thr	Lys	Val	Thr	Val	Leu		
			100					105					110			

<210> 42
 <211> 321
 <212> DNA
 <213> Human

<400> 42

gac	atc	cag	ttg	acc	cag	tct	cca	tct	tct	gtg	tct	gca	tct	gtt	gga	48
Asp	Ile	Gln	Leu	Thr	Gln	Ser	Pro	Ser	Ser	Val	Ser	Ala	Ser	Val	Gly	
				5					10					15		
gac	agc	gtc	acc	atc	act	tgt	cgg	gcg	agt	cag	gat	att	agc	agc	tgg	96
Asp	Ser	Val	Thr	Ile	Thr	Cys	Arg	Ala	Ser	Gln	Asp	Ile	Ser	Ser	Trp	
			20					25					30			
tta	gcc	tgg	tat	caa	cag	aaa	cca	ggg	gag	gcc	cct	aag	ctc	ctg	atc	144
Leu	Ala	Trp	Tyr	Gln	Gln	Lys	Pro	Gly	Glu	Ala	Pro	Lys	Leu	Leu	Ile	
		35					40					45				
tat	gct	gca	tcc	ctt	ctt	caa	agt	ggg	gtc	cca	tca	cgg	ttc	agc	ggc	192
Tyr	Ala	Ala	Ser	Leu	Leu	Gln	Ser	Gly	Val	Pro	Ser	Arg	Phe	Ser	Gly	
	50					55					60					
agt	gga	tct	ggg	aca	gat	ttc	gct	ctc	act	atc	aac	agc	ctg	cag	cct	240
Ser	Gly	Ser	Gly	Thr	Asp	Phe	Ala	Leu	Thr	Ile	Asn	Ser	Leu	Gln	Pro	
	65				70					75					80	
gaa	gat	ttt	gca	act	tac	ttt	tgt	caa	cag	gct	gac	agt	ttc	cct	ccc	288
Glu	Asp	Phe	Ala	Thr	Tyr	Phe	Cys	Gln	Gln	Ala	Asp	Ser	Phe	Pro	Pro	
			85					90						95		
acc	ttc	ggc	caa	ggg	aca	cgg	ctg	gag	att	aaa						321
Thr	Phe	Gly	Gln	Gly	Thr	Arg	Leu	Glu	Ile	Lys						
			100					105								

<210> 43
 <211> 107
 <212> PRT
 <213> Human

<400> 43

Asp	Ile	Gln	Leu	Thr	Gln	Ser	Pro	Ser	Ser	Val	Ser	Ala	Ser	Val	Gly	
				5					10					15		
Asp	Ser	Val	Thr	Ile	Thr	Cys	Arg	Ala	Ser	Gln	Asp	Ile	Ser	Ser	Trp	
			20					25					30			
Leu	Ala	Trp	Tyr	Gln	Gln	Lys	Pro	Gly	Glu	Ala	Pro	Lys	Leu	Leu	Ile	
		35					40					45				
Tyr	Ala	Ala	Ser	Leu	Leu	Gln	Ser	Gly	Val	Pro	Ser	Arg	Phe	Ser	Gly	
	50					55					60					
Ser	Gly	Ser	Gly	Thr	Asp	Phe	Ala	Leu	Thr	Ile	Asn	Ser	Leu	Gln	Pro	
	65				70					75					80	
Glu	Asp	Phe	Ala	Thr	Tyr	Phe	Cys	Gln	Gln	Ala	Asp	Ser	Phe	Pro	Pro	
				85					90					95		
Thr	Phe	Gly	Gln	Gly	Thr	Arg	Leu	Glu	Ile	Lys						
			100					105								

<210> 44
 <211> 321
 <212> DNA
 <213> Human

<400> 44

gac	atc	gag	ttg	acc	cag	tct	cca	tct	tcc	gtg	tct	gca	tct	gtg	gga	48
Asp	Ile	Glu	Leu	Thr	Gln	Ser	Pro	Ser	Ser	Val	Ser	Ala	Ser	Val	Gly	
				5					10					15		
gac	aga	gtc	acc	ctc	act	tgt	cgg	gcg	agt	cag	agt	att	aag	agg	tgg	96
Asp	Arg	Val	Thr	Leu	Thr	Cys	Arg	Ala	Ser	Gln	Ser	Ile	Lys	Arg	Trp	
			20					25					30			
tta	gcc	tgg	tat	cag	cag	aaa	cca	ggg	aag	gcc	cct	agg	ctc	ctc	atc	144
Leu	Ala	Trp	Tyr	Gln	Gln	Lys	Pro	Gly	Lys	Ala	Pro	Arg	Leu	Leu	Ile	
		35					40					45				
tat	gct	gca	tcc	act	ttg	caa	agt	ggg	gtc	cca	tca	agg	ttc	agc	ggc	192
Tyr	Ala	Ala	Ser	Thr	Leu	Gln	Ser	Gly	Val	Pro	Ser	Arg	Phe	Ser	Gly	
	50					55					60					
ggt	gga	tct	ggg	aca	gat	ttc	act	ctc	acc	atc	aac	agc	ctg	cag	cct	240
Gly	Gly	Ser	Gly	Thr	Asp	Phe	Thr	Leu	Thr	Ile	Asn	Ser	Leu	Gln	Pro	
	65				70					75					80	
gaa	gat	ttt	gca	att	tac	tac	tgt	caa	cag	gct	aac	agt	ttc	cct	ccc	288
Glu	Asp	Phe	Ala	Ile	Tyr	Tyr	Cys	Gln	Gln	Ala	Asn	Ser	Phe	Pro	Pro	
				85					90					95		
act	ttc	ggc	cct	ggg	acc	aaa	gtg	gat	atc	aaa						321
Thr	Phe	Gly	Pro	Gly	Thr	Lys	Val	Asp	Ile	Lys						
			100					105								

<210> 45
 <211> 107
 <212> PRT
 <213> Human

<400> 45

Asp	Ile	Glu	Leu	Thr	Gln	Ser	Pro	Ser	Ser	Val	Ser	Ala	Ser	Val	Gly	
				5					10					15		
Asp	Arg	Val	Thr	Leu	Thr	Cys	Arg	Ala	Ser	Gln	Ser	Ile	Lys	Arg	Trp	
			20					25					30			
Leu	Ala	Trp	Tyr	Gln	Gln	Lys	Pro	Gly	Lys	Ala	Pro	Arg	Leu	Leu	Ile	
		35					40					45				
Tyr	Ala	Ala	Ser	Thr	Leu	Gln	Ser	Gly	Val	Pro	Ser	Arg	Phe	Ser	Gly	
	50					55					60					
Gly	Gly	Ser	Gly	Thr	Asp	Phe	Thr	Leu	Thr	Ile	Asn	Ser	Leu	Gln	Pro	
	65				70					75					80	
Glu	Asp	Phe	Ala	Ile	Tyr	Tyr	Cys	Gln	Gln	Ala	Asn	Ser	Phe	Pro	Pro	
				85					90					95		
Thr	Phe	Gly	Pro	Gly	Thr	Lys	Val	Asp	Ile	Lys						
			100					105								

<210> 46
 <211> 333
 <212> DNA
 <213> Human

<400> 46

cag	tct	gtc	gtg	acg	cag	ccg	ccc	tca	gtg	tct	ggg	gcc	cca	ggg	cag	48
Gln	Ser	Val	Val	Thr	Gln	Pro	Pro	Ser	Val	Ser	Gly	Ala	Pro	Gly	Gln	
				5					10					15		
agg	gtc	acc	atc	tcc	tgc	agt	ggg	agc	agg	tcc	aac	atc	ggg	gca	cac	96
Arg	Val	Thr	Ile	Ser	Cys	Ser	Gly	Ser	Arg	Ser	Asn	Ile	Gly	Ala	His	
			20				25						30			
tat	gaa	gtc	cag	tgg	tac	cag	cag	ttt	ccg	gga	gca	gcc	ccc	aaa	ctc	144
Tyr	Glu	Val	Gln	Trp	Tyr	Gln	Gln	Phe	Pro	Gly	Ala	Ala	Pro	Lys	Leu	
		35					40					45				
ctc	atc	tat	ggg	gac	acc	aat	cgg	ccc	tca	ggg	gtc	cct	gac	cga	ttc	192
Leu	Ile	Tyr	Gly	Asp	Thr	Asn	Arg	Pro	Ser	Gly	Val	Pro	Asp	Arg	Phe	
	50					55					60					
tct	gcc	tcc	cac	tct	ggc	acc	tca	gcc	tcc	ctt	gcc	atc	aca	ggg	ctc	240
Ser	Ala	Ser	His	Ser	Gly	Thr	Ser	Ala	Ser	Leu	Ala	Ile	Thr	Gly	Leu	
	65				70				75					80		
cag	gct	gag	gat	gag	gct	gat	tat	tac	tgc	cag	tcg	tat	gac	acc	agt	288
Gln	Ala	Glu	Asp	Glu	Ala	Asp	Tyr	Tyr	Cys	Gln	Ser	Tyr	Asp	Thr	Ser	
				85					90					95		
cta	cgt	ggg	ccg	gtg	ttc	ggc	gga	ggg	acc	aag	ctg	acc	gtc	cta		333
Leu	Arg	Gly	Pro	Val	Phe	Gly	Gly	Gly	Thr	Lys	Leu	Thr	Val	Leu		
			100					105					110			

<210> 47
 <211> 111
 <212> PRT
 <213> Human

<400> 47

Gln	Ser	Val	Val	Thr	Gln	Pro	Pro	Ser	Val	Ser	Gly	Ala	Pro	Gly	Gln	
				5					10					15		
Arg	Val	Thr	Ile	Ser	Cys	Ser	Gly	Ser	Arg	Ser	Asn	Ile	Gly	Ala	His	
			20					25					30			
Tyr	Glu	Val	Gln	Trp	Tyr	Gln	Gln	Phe	Pro	Gly	Ala	Ala	Pro	Lys	Leu	
		35					40					45				
Leu	Ile	Tyr	Gly	Asp	Thr	Asn	Arg	Pro	Ser	Gly	Val	Pro	Asp	Arg	Phe	
	50					55					60					
Ser	Ala	Ser	His	Ser	Gly	Thr	Ser	Ala	Ser	Leu	Ala	Ile	Thr	Gly	Leu	
	65				70					75					80	
Gln	Ala	Glu	Asp	Glu	Ala	Asp	Tyr	Tyr	Cys	Gln	Ser	Tyr	Asp	Thr	Ser	
				85					90					95		
Leu	Arg	Gly	Pro	Val	Phe	Gly	Gly	Gly	Thr	Lys	Leu	Thr	Val	Leu		
			100					105					110			

<210> 48
 <211> 333
 <212> DNA
 <213> Human

<400> 48

cag	tct	gtc	gtg	acg	cag	ccg	ccc	tca	gtg	tct	ggg	gcc	cca	ggg	cag	48
Gln	Ser	Val	Val	Thr	Gln	Pro	Pro	Ser	Val	Ser	Gly	Ala	Pro	Gly	Gln	
				5					10					15		
agg	gtc	acc	atc	tcc	tgc	act	ggg	agc	agc	tcc	aac	atc	ggg	aca	ggg	96
Arg	Val	Thr	Ile	Ser	Cys	Thr	Gly	Ser	Ser	Ser	Asn	Ile	Gly	Thr	Gly	
			20					25					30			
tat	gat	gta	cat	tgg	tac	cag	cag	gtt	cca	gga	tca	gcc	ccc	aaa	ctc	144
Tyr	Asp	Val	His	Trp	Tyr	Gln	Gln	Val	Pro	Gly	Ser	Ala	Pro	Lys	Leu	
		35					40					45				
ctc	atc	tat	gct	tac	acc	aat	cgg	ccc	tca	ggg	gtc	cct	gac	cga	ttc	192
Leu	Ile	Tyr	Ala	Tyr	Thr	Asn	Arg	Pro	Ser	Gly	Val	Pro	Asp	Arg	Phe	
	50					55					60					
tct	ggc	tcc	aag	tct	ggc	atg	tca	gcc	tcc	ctg	gtc	atc	ggg	ggg	ctc	240
Ser	Gly	Ser	Lys	Ser	Gly	Met	Ser	Ala	Ser	Leu	Val	Ile	Gly	Gly	Leu	
	65				70					75					80	
cag	gct	gag	gat	gag	gct	gat	tat	tac	tgc	cag	tcc	ttt	gac	gac	agc	288
Gln	Ala	Glu	Asp	Glu	Ala	Asp	Tyr	Tyr	Cys	Gln	Ser	Phe	Asp	Asp	Ser	
				85					90					95		
ctg	aat	ggg	ctt	gtc	ttc	gga	cct	ggg	acc	tcg	gtc	acc	gtc	ctc		333
Leu	Asn	Gly	Leu	Val	Phe	Gly	Pro	Gly	Thr	Ser	Val	Thr	Val	Leu		
			100					105					110			

<210> 49
 <211> 111
 <212> PRT
 <213> Human

<400> 49

Gln	Ser	Val	Val	Thr	Gln	Pro	Pro	Ser	Val	Ser	Gly	Ala	Pro	Gly	Gln	
				5					10					15		
Arg	Val	Thr	Ile	Ser	Cys	Thr	Gly	Ser	Ser	Ser	Asn	Ile	Gly	Thr	Gly	
			20					25					30			
Tyr	Asp	Val	His	Trp	Tyr	Gln	Gln	Val	Pro	Gly	Ser	Ala	Pro	Lys	Leu	
		35					40					45				
Leu	Ile	Tyr	Ala	Tyr	Thr	Asn	Arg	Pro	Ser	Gly	Val	Pro	Asp	Arg	Phe	
	50					55					60					
Ser	Gly	Ser	Lys	Ser	Gly	Met	Ser	Ala	Ser	Leu	Val	Ile	Gly	Gly	Leu	
	65				70					75					80	
Gln	Ala	Glu	Asp	Glu	Ala	Asp	Tyr	Tyr	Cys	Gln	Ser	Phe	Asp	Asp	Ser	
				85					90					95		
Leu	Asn	Gly	Leu	Val	Phe	Gly	Pro	Gly	Thr	Ser	Val	Thr	Val	Leu		
			100					105					110			

<210> 50
 <211> 333
 <212> DNA
 <213> Human

<400> 50

cag	tct	gtg	ttg	acg	cag	ccg	ccc	tca	gtg	tct	ggg	gcc	cca	ggg	cag	48
Gln	Ser	Val	Leu	Thr	Gln	Pro	Pro	Ser	Val	Ser	Gly	Ala	Pro	Gly	Gln	
				5					10					15		
agg	gtc	acc	atc	tcc	tgc	act	ggg	agc	cac	tcc	aac	ttc	ggg	gca	ggc	96
Arg	Val	Thr	Ile	Ser	Cys	Thr	Gly	Ser	His	Ser	Asn	Phe	Gly	Ala	Gly	
			20					25					30			
act	gat	gtc	cat	tgg	tac	caa	cac	ctt	cca	gga	aca	gcc	ccc	aga	ctc	144
Thr	Asp	Val	His	Trp	Tyr	Gln	His	Leu	Pro	Gly	Thr	Ala	Pro	Arg	Leu	
		35					40					45				
ctc	att	cat	gga	gac	act	cat	cgg	ccc	tcc	ggg	gtc	gct	gac	cga	ttc	192
Leu	Ile	His	Gly	Asp	Thr	His	Arg	Pro	Ser	Gly	Val	Ala	Asp	Arg	Phe	
	50					55					60					
tct	ggc	tcc	agg	tct	ggc	gcc	tca	gcc	tcc	ctg	gcc	atc	act	ggg	ctc	240
Ser	Gly	Ser	Arg	Ser	Gly	Ala	Ser	Ala	Ser	Leu	Ala	Ile	Thr	Gly	Leu	
	65				70					75					80	
cgg	gtt	gag	gat	gag	gct	gat	tat	tac	tgt	cag	tcg	tat	gac	tat	ggc	288
Arg	Val	Glu	Asp	Glu	Ala	Asp	Tyr	Tyr	Cys	Gln	Ser	Tyr	Asp	Tyr	Gly	
				85					90					95		
ctg	aga	ggc	tgg	gtg	ttc	ggc	ggc	ggg	acc	aag	ctg	acc	gtc	ctt		333
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			20					25					30			
Thr	Asp	Val	His	Trp	Tyr	Gln	His	Leu	Pro	Gly	Thr	Ala	Pro	Arg	Leu	
		35					40					45				
Leu	Ile	His	Gly	Asp	Thr	His	Arg	Pro	Ser	Gly	Val	Ala	Asp	Arg	Phe	
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Ser	Gly	Ser	Arg	Ser	Gly	Ala	Ser	Ala	Ser	Leu	Ala	Ile	Thr	Gly	Leu	
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Arg	Val	Glu	Asp	Glu	Ala	Asp	Tyr	Tyr	Cys	Gln	Ser	Tyr	Asp	Tyr	Gly	
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gac	aga	gtc	acc	atc	act	tgt	cgg	gcg	agt	cag	ggc	att	gac	aac	tgg	96
Asp	Arg	Val	Thr	Ile	Thr	Cys	Arg	Ala	Ser	Gln	Gly	Ile	Asp	Asn	Trp	
			20					25					30			
tta	ggc	tgg	tat	cag	cag	aaa	cct	ggg	aaa	gcc	cct	aaa	ctc	ctg	atc	144
Leu	Gly	Trp	Tyr	Gln	Gln	Lys	Pro	Gly	Lys	Ala	Pro	Lys	Leu	Leu	Ile	
		35					40					45				
tac	gat	gca	tcc	aat	ttg	gac	aca	ggg	gtc	cca	tca	agg	ttc	agt	gga	192
Tyr	Asp	Ala	Ser	Asn	Leu	Asp	Thr	Gly	Val	Pro	Ser	Arg	Phe	Ser	Gly	
	50					55					60					
agt	gga	tct	ggg	aca	tat	ttt	act	ctc	acc	atc	agt	agc	ctg	caa	gct	240
Ser	Gly	Ser	Gly	Thr	Tyr	Phe	Thr	Leu	Thr	Ile	Ser	Ser	Leu	Gln	Ala	
	65				70					75					80	
gaa	gat	ttt	gca	gtt	tat	ttc	tgt	caa	cag	gct	aaa	gct	ttt	cct	ccc	288
Glu	Asp	Phe	Ala	Val	Tyr	Phe	Cys	Gln	Gln	Ala	Lys	Ala	Phe	Pro	Pro	
			85					90						95		
act	ttc	ggc	gga	ggg	acc	aag	gtg	gac	atc	aaa						321
Thr	Phe	Gly	Gly	Gly	Thr	Lys	Val	Asp	Ile	Lys						
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35 40 45
Tyr Asp Ala Ser Asn Leu Asp Thr Gly Val Pro Ser Arg Phe Ser Gly
50 55 60
Ser Gly Ser Gly Thr Tyr Phe Thr Leu Thr Ile Ser Ser Leu Gln Ala
65 70 75 80
Glu Asp Phe Ala Val Tyr Phe Cys Gln Gln Ala Lys Ala Phe Pro Pro
85 90 95
Thr Phe Gly Gly Gly Thr Lys Val Asp Ile Lys
100 105

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Gly Asp Ser Asn Arg Pro Ser
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Gln Ser Tyr Asp Tyr Gly Leu Arg Gly Trp Val
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Arg Ala Ser Gln Asn Ile Asn Asn Tyr Leu Asn
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Ala Ala Ser Thr Leu Gln Ser
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Gln Gln Tyr Ser Arg Tyr Pro Pro Thr
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Thr Gly Ser Ser Thr Asp Val Gly Asn Tyr Asn Tyr Ile Ser
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Asn Ser Tyr Ser Ala Thr Asp Thr Leu Val
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Ala Tyr Thr Asn Arg Pro Ser
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Gln Ser Phe Asp Asp Ser Leu Asn Gly Leu Val
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Gly Asp Thr His Arg Pro Ser
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Arg Ala Ser Gln Gly Ile Asp Asn Trp Leu Gly
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Asp Ala Ser Asn Leu Asp Thr
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Gln Gln Ala Lys Ala Phe Pro Pro Thr
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Met Gln Ser Lys Val Leu Leu Ala Val Ala Leu Trp Leu Cys Val Glu
5 10 15

acc cgg gcc gcc tct gtg ggt ttg cct agt gtt tct ctt gat ctg ccc 155
Thr Arg Ala Ala Ser Val Gly Leu Pro Ser Val Ser Leu Asp Leu Pro
20 25 30

agg ctc agc ata caa aaa gac ata ctt aca att aag gct aat aca act 203
Arg Leu Ser Ile Gln Lys Asp Ile Leu Thr Ile Lys Ala Asn Thr Thr
35 40 45

ctt caa att act tgc agg gga cag agg gac ttg gac tgg ctt tgg ccc 251
Leu Gln Ile Thr Cys Arg Gly Gln Arg Asp Leu Asp Trp Leu Trp Pro
50 55 60

aat aat cag agt ggc agt gag caa agg gtg gag gtg act gag tgc agc 299
Asn Asn Gln Ser Gly Ser Glu Gln Arg Val Glu Val Thr Glu Cys Ser

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Asp	Gly	Leu	Phe	Cys	Lys	Thr	Leu	Thr	Ile	Pro	Lys	Val	Ile	Gly	Asn				
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gac	act	gga	gcc	tac	aag	tgc	ttc	tac	cgg	gaa	act	gac	ttg	gcc	tcg	395			
Asp	Thr	Gly	Ala	Tyr	Lys	Cys	Phe	Tyr	Arg	Glu	Thr	Asp	Leu	Ala	Ser				
			100					105					110						
gtc	att	tat	gtc	tat	gtt	caa	gat	tac	aga	tct	cca	ttt	att	gct	tct	443			
Val	Ile	Tyr	Val	Tyr	Val	Gln	Asp	Tyr	Arg	Ser	Pro	Phe	Ile	Ala	Ser				
		115					120					125							
gtt	agt	gac	caa	cat	gga	gtc	gtg	tac	att	act	gag	aac	aaa	aac	aaa	491			
Val	Ser	Asp	Gln	His	Gly	Val	Val	Tyr	Ile	Thr	Glu	Asn	Lys	Asn	Lys				
	130					135					140								
act	gtg	gtg	att	cca	tgt	ctc	ggg	tcc	att	tca	aat	ctc	aac	gtg	tca	539			
Thr	Val	Val	Ile	Pro	Cys	Leu	Gly	Ser	Ile	Ser	Asn	Leu	Asn	Val	Ser				
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ctt	tgt	gca	aga	tac	cca	gaa	aag	aga	ttt	gtt	cct	gat	ggt	aac	aga	587			
Leu	Cys	Ala	Arg	Tyr	Pro	Glu	Lys	Arg	Phe	Val	Pro	Asp	Gly	Asn	Arg				
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Ile	Ser	Trp	Asp	Ser	Lys	Lys	Gly	Phe	Thr	Ile	Pro	Ser	Tyr	Met	Ile				
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Ser	Tyr	Ala	Gly	Met	Val	Phe	Cys	Glu	Ala	Lys	Ile	Asn	Asp	Glu	Ser				
		195					200					205							
tac	cag	tct	att	atg	tac	ata	gtt	gtc	gtt	gta	ggg	tat	agg	att	tat	731			
Tyr	Gln	Ser	Ile	Met	Tyr	Ile	Val	Val	Val	Val	Gly	Tyr	Arg	Ile	Tyr				
	210					215					220								
gat	gtg	gtt	ctg	agt	ccg	tct	cat	gga	att	gaa	cta	tct	gtt	gga	gaa	779			
Asp	Val	Val	Leu	Ser	Pro	Ser	His	Gly	Ile	Glu	Leu	Ser	Val	Gly	Glu				
225					230					235				240					
aag	ctt	gtc	tta	aat	tgt	aca	gca	aga	act	gaa	cta	aat	gtg	ggg	att	827			
Lys	Leu	Val	Leu	Asn	Cys	Thr	Ala	Arg	Thr	Glu	Leu	Asn	Val	Gly	Ile				
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gac	ttc	aac	tgg	gaa	tac	cct	tct	tcg	aag	cat	cag	cat	aag	aaa	ctt	875			
Asp	Phe	Asn	Trp	Glu	Tyr	Pro	Ser	Ser	Lys	His	Gln	His	Lys	Lys	Leu				
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gta	aac	cga	gac	cta	aaa	acc	cag	tct	ggg	agt	gag	atg	aag	aaa	ttt	923			
Val	Asn	Arg	Asp	Leu	Lys	Thr	Gln	Ser	Gly	Ser	Glu	Met	Lys	Lys	Phe				
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ttg	agc	acc	tta	act	ata	gat	ggg	gta	acc	cgg	agt	gac	caa	gga	ttg	971			
Leu	Ser	Thr	Leu	Thr	Ile	Asp	Gly	Val	Thr	Arg	Ser	Asp	Gln	Gly	Leu				
	290					295					300								
tac	acc	tgt	gca	gca	tcc	agt	ggg	ctg	atg	acc	aag	aag	aac	agc	aca	1019			
Tyr	Thr	Cys	Ala	Ala	Ser	Ser	Gly	Leu	Met	Thr	Lys	Lys	Asn	Ser	Thr				
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Phe	Val	Arg	Val	His	Glu	Lys	Pro	Phe	Val	Ala	Phe	Gly	Ser	Gly	Met				

325										330					335					
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Glu	Ser	Leu	Val	Glu	Ala	Thr	Val	Gly	Glu	Arg	Val	Arg	Ile	Pro	Ala					
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aag	tac	ctt	ggg	tac	cca	ccc	cca	gaa	ata	aaa	tgg	tat	aaa	aat	gga	1163				
Lys	Tyr	Leu	Gly	Tyr	Pro	Pro	Pro	Glu	Ile	Lys	Trp	Tyr	Lys	Asn	Gly					
		355					360					365								
ata	ccc	ctt	gag	tcc	aat	cac	aca	att	aaa	gcg	ggg	cat	gta	ctg	acg	1211				
Ile	Pro	Leu	Glu	Ser	Asn	His	Thr	Ile	Lys	Ala	Gly	His	Val	Leu	Thr					
	370					375					380									
att	atg	gaa	gtg	agt	gaa	aga	gac	aca	gga	aat	tac	act	gtc	atc	ctt	1259				
Ile	Met	Glu	Val	Ser	Glu	Arg	Asp	Thr	Gly	Asn	Tyr	Thr	Val	Ile	Leu					
385					390					395					400					
acc	aat	ccc	att	tca	aag	gag	aag	cag	agc	cat	gtg	gtc	tct	ctg	gtt	1307				
Thr	Asn	Pro	Ile	Ser	Lys	Glu	Lys	Gln	Ser	His	Val	Val	Ser	Leu	Val					
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gtg	tat	gtc	cca	ccc	cag	att	ggg	gag	aaa	tct	cta	atc	tct	cct	gtg	1355				
Val	Tyr	Val	Pro	Pro	Gln	Ile	Gly	Glu	Lys	Ser	Leu	Ile	Ser	Pro	Val					
			420					425					430							
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Asp	Ser	Tyr	Gln	Tyr	Gly	Thr	Thr	Gln	Thr	Leu	Thr	Cys	Thr	Val	Tyr					
		435				440						445								
gcc	att	cct	ccc	ccg	cat	cac	atc	cac	tgg	tat	tgg	cag	ttg	gag	gaa	1451				
Ala	Ile	Pro	Pro	Pro	His	His	Ile	His	Trp	Tyr	Trp	Gln	Leu	Glu	Glu					
	450					455					460									
gag	tgc	gcc	aac	gag	ccc	agc	cat	gct	gtc	tca	gtg	aca	aac	cca	tac	1499				
Glu	Cys	Ala	Asn	Glu	Pro	Ser	His	Ala	Val	Ser	Val	Thr	Asn	Pro	Tyr					
465					470				475						480					
cct	tgt	gaa	gaa	tgg	aga	agt	gtg	gag	gac	ttc	cag	gga	gga	aat	aaa	1547				
Pro	Cys	Glu	Glu	Trp	Arg	Ser	Val	Glu	Asp	Phe	Gln	Gly	Gly	Asn	Lys					
				485					490					495						
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Ile	Glu	Val	Asn	Lys	Asn	Gln	Phe	Ala	Leu	Ile	Glu	Gly	Lys	Asn	Lys					
			500					505					510							
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Thr	Val	Ser	Thr	Leu	Val	Ile	Gln	Ala	Ala	Asn	Val	Ser	Ala	Leu	Tyr					
		515				520						525								
aaa	tgt	gaa	gcg	gtc	aac	aaa	gtc	ggg	aga	gga	gag	agg	gtg	atc	tcc	1691				
Lys	Cys	Glu	Ala	Val	Asn	Lys	Val	Gly	Arg	Gly	Glu	Arg	Val	Ile	Ser					
	530					535					540									
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Phe	His	Val	Thr	Arg	Gly	Pro	Glu	Ile	Thr	Leu	Gln	Pro	Asp	Met	Gln					
545					550				555						560					
ccc	act	gag	cag	gag	agc	gtg	tct	ttg	tgg	tgc	act	gca	gac	aga	tct	1787				
Pro	Thr	Glu	Gln	Glu	Ser	Val	Ser	Leu	Trp	Cys	Thr	Ala	Asp	Arg	Ser					
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acg	ttt	gag	aac	ctc	aca	tgg	tac	aag	ctt	ggc	cca	cag	cct	ctg	cca	1835				
Thr	Phe	Glu	Asn	Leu	Thr	Trp	Tyr	Lys	Leu	Gly	Pro	Gln	Pro	Leu	Pro					

580								585					590					
atc	cat	gtg	gga	gag	ttg	ccc	aca	cct	gtt	tgc	aag	aac	ttg	gat	act	1883		
Ile	His	Val	Gly	Glu	Leu	Pro	Thr	Pro	Val	Cys	Lys	Asn	Leu	Asp	Thr			
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ctt	tgg	aaa	ttg	aat	gcc	acc	atg	ttc	tct	aat	agc	aca	aat	gac	att	1931		
Leu	Trp	Lys	Leu	Asn	Ala	Thr	Met	Phe	Ser	Asn	Ser	Thr	Asn	Asp	Ile			
	610					615					620							
ttg	atc	atg	gag	ctt	aag	aat	gca	tcc	ttg	cag	gac	caa	gga	gac	tat	1979		
Leu	Ile	Met	Glu	Leu	Lys	Asn	Ala	Ser	Leu	Gln	Asp	Gln	Gly	Asp	Tyr			
625					630					635					640			
gtc	tgc	ctt	gct	caa	gac	agg	aag	acc	aag	aaa	aga	cat	tgc	gtg	gtc	2027		
Val	Cys	Leu	Ala	Gln	Asp	Arg	Lys	Thr	Lys	Lys	Arg	His	Cys	Val	Val			
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Arg	Gln	Leu	Thr	Val	Leu	Glu	Arg	Val	Ala	Pro	Thr	Ile	Thr	Gly	Asn			
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ctg	gaa	aat	cag	acg	aca	agt	att	ggg	gaa	agc	atc	gaa	gtc	tca	tgc	2123		
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Thr	Ala	Ser	Gly	Asn	Pro	Pro	Pro	Gln	Ile	Met	Trp	Phe	Lys	Asp	Asn			
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gag	acc	ctt	gta	gaa	gac	tca	ggc	att	gta	ttg	aag	gat	ggg	aac	cgg	2219		
Glu	Thr	Leu	Val	Glu	Asp	Ser	Gly	Ile	Val	Leu	Lys	Asp	Gly	Asn	Arg			
705					710					715					720			
aac	ctc	act	atc	cgc	aga	gtg	agg	aag	gag	gac	gaa	ggc	ctc	tac	acc	2267		
Asn	Leu	Thr	Ile	Arg	Arg	Val	Arg	Lys	Glu	Asp	Glu	Gly	Leu	Tyr	Thr			
				725					730					735				
tgc	cag	gca	tgc	agt	gtt	ctt	ggc	tgt	gca	aaa	gtg	gag	gca	ttt	ttc	2315		
Cys	Gln	Ala	Cys	Ser	Val	Leu	Gly	Cys	Ala	Lys	Val	Glu	Ala	Phe	Phe			
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ata	ata	gaa	ggt	gcc	cag	gaa	aag	acg	aac	ttg	gaa					2351		
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Asp	Thr	Gly	Ala 100	Tyr	Lys	Cys	Phe	Tyr 105	Arg	Glu	Thr	Asp	Leu 110	Ala	Ser
Val	Ile	Tyr 115	Val	Tyr	Val	Gln	Asp 120	Tyr	Arg	Ser	Pro	Phe 125	Ile	Ala	Ser
Val 130	Ser	Asp	Gln	His	Gly	Val 135	Val	Tyr	Ile	Thr	Glu 140	Asn	Lys	Asn	Lys
Thr 145	Val	Val	Ile	Pro	Cys 150	Leu	Gly	Ser	Ile	Ser 155	Asn	Leu	Asn	Val	Ser 160
Leu	Cys	Ala	Arg	Tyr 165	Pro	Glu	Lys	Arg	Phe 170	Val	Pro	Asp	Gly	Asn 175	Arg
Ile	Ser	Trp	Asp 180	Ser	Lys	Lys	Gly	Phe 185	Thr	Ile	Pro	Ser	Tyr 190	Met	Ile
Ser	Tyr	Ala 195	Gly	Met	Val	Phe	Cys 200	Glu	Ala	Lys	Ile	Asn 205	Asp	Glu	Ser
Tyr 210	Gln	Ser	Ile	Met	Tyr	Ile 215	Val	Val	Val	Val	Gly 220	Tyr	Arg	Ile	Tyr
Asp 225	Val	Val	Leu	Ser	Pro 230	Ser	His	Gly	Ile	Glu 235	Leu	Ser	Val	Gly	Glu 240
Lys	Leu	Val	Leu	Asn 245	Cys	Thr	Ala	Arg	Thr 250	Glu	Leu	Asn	Val	Gly 255	Ile
Asp	Phe	Asn 260	Trp	Glu	Tyr	Pro	Ser	Ser 265	Lys	His	Gln	His	Lys 270	Lys	Leu
Val	Asn	Arg 275	Asp	Leu	Lys	Thr	Gln 280	Ser	Gly	Ser	Glu	Met 285	Lys	Lys	Phe
Leu 290	Ser	Thr	Leu	Thr	Ile	Asp 295	Gly	Val	Thr	Arg	Ser 300	Asp	Gln	Gly	Leu
Tyr 305	Thr	Cys	Ala	Ala 310	Ser	Gly	Leu	Met	Thr 315	Lys	Lys	Asn	Ser	Thr 320	
Phe	Val	Arg	Val	His 325	Glu	Lys	Pro	Phe	Val 330	Ala	Phe	Gly	Ser	Gly 335	Met
Glu	Ser	Leu	Val 340	Glu	Ala	Thr	Val	Gly 345	Glu	Arg	Val	Arg	Ile 350	Pro	Ala
Lys	Tyr	Leu 355	Gly	Tyr	Pro	Pro	Pro 360	Glu	Ile	Lys	Trp	Tyr 365	Lys	Asn	Gly
Ile 370	Pro	Leu	Glu	Ser	Asn 375	His	Thr	Ile	Lys	Ala	Gly 380	His	Val	Leu	Thr
Ile 385	Met	Glu	Val	Ser	Glu 390	Arg	Asp	Thr	Gly	Asn 395	Tyr	Thr	Val	Ile	Leu 400

Thr	Asn	Pro	Ile	Ser	Lys	Glu	Lys	Gln	Ser	His	Val	Val	Ser	Leu	Val	
				405					410					415		
Val	Tyr	Val	Pro	Pro	Gln	Ile	Gly	Glu	Lys	Ser	Leu	Ile	Ser	Pro	Val	
			420					425					430			
Asp	Ser	Tyr	Gln	Tyr	Gly	Thr	Thr	Gln	Thr	Leu	Thr	Cys	Thr	Val	Tyr	
		435					440					445				
Ala	Ile	Pro	Pro	Pro	His	His	Ile	His	Trp	Tyr	Trp	Gln	Leu	Glu	Glu	
	450					455					460					
Glu	Cys	Ala	Asn	Glu	Pro	Ser	His	Ala	Val	Ser	Val	Thr	Asn	Pro	Tyr	
465					470					475					480	
Pro	Cys	Glu	Glu	Trp	Arg	Ser	Val	Glu	Asp	Phe	Gln	Gly	Gly	Asn	Lys	
				485					490					495		
Ile	Glu	Val	Asn	Lys	Asn	Gln	Phe	Ala	Leu	Ile	Glu	Gly	Lys	Asn	Lys	
			500					505					510			
Thr	Val	Ser	Thr	Leu	Val	Ile	Gln	Ala	Ala	Asn	Val	Ser	Ala	Leu	Tyr	
		515					520					525				
Lys	Cys	Glu	Ala	Val	Asn	Lys	Val	Gly	Arg	Gly	Glu	Arg	Val	Ile	Ser	
	530					535					540					
Phe	His	Val	Thr	Arg	Gly	Pro	Glu	Ile	Thr	Leu	Gln	Pro	Asp	Met	Gln	
545					550					555					560	
Pro	Thr	Glu	Gln	Glu	Ser	Val	Ser	Leu	Trp	Cys	Thr	Ala	Asp	Arg	Ser	
				565					570					575		
Thr	Phe	Glu	Asn	Leu	Thr	Trp	Tyr	Lys	Leu	Gly	Pro	Gln	Pro	Leu	Pro	
			580					585					590			
Ile	His	Val	Gly	Glu	Leu	Pro	Thr	Pro	Val	Cys	Lys	Asn	Leu	Asp	Thr	
		595					600					605				
Leu	Trp	Lys	Leu	Asn	Ala	Thr	Met	Phe	Ser	Asn	Ser	Thr	Asn	Asp	Ile	
	610					615					620					
Leu	Ile	Met	Glu	Leu	Lys	Asn	Ala	Ser	Leu	Gln	Asp	Gln	Gly	Asp	Tyr	
625					630					635					640	
Val	Cys	Leu	Ala	Gln	Asp	Arg	Lys	Thr	Lys	Lys	Arg	His	Cys	Val	Val	
				645					650					655		
Arg	Gln	Leu	Thr	Val	Leu	Glu	Arg	Val	Ala	Pro	Thr	Ile	Thr	Gly	Asn	
			660					665					670			
Leu	Glu	Asn	Gln	Thr	Thr	Ser	Ile	Gly	Glu	Ser	Ile	Glu	Val	Ser	Cys	
		675					680					685				
Thr	Ala	Ser	Gly	Asn	Pro	Pro	Pro	Gln	Ile	Met	Trp	Phe	Lys	Asp	Asn	
	690					695					700					
Glu	Thr	Leu	Val	Glu	Asp	Ser	Gly	Ile	Val	Leu	Lys	Asp	Gly	Asn	Arg	
705					710					715					720	
Asn	Leu	Thr	Ile	Arg	Arg	Val	Arg	Lys	Glu	Asp	Glu	Gly	Leu	Tyr	Thr	
				725					730					735		
Cys	Gln	Ala	Cys	Ser	Val	Leu	Gly	Cys	Ala	Lys	Val	Glu	Ala	Phe	Phe	

